Inside Wallops

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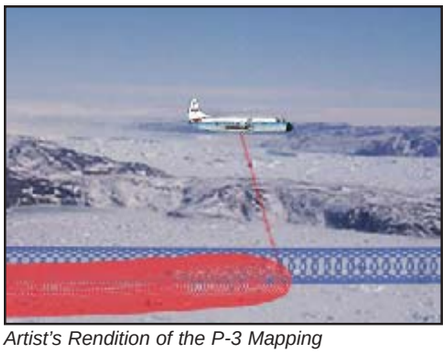
Mapping the Greenland Ice Sheets

The ice sheet covering Greenland is expansive. Beyond the northern reaches of the Atlantic Ocean, Greenland is the largest island in the world and has the second largest mass of frozen fresh water on Earth. The ice and snow, covering 85 percent of the island, may provide important clues on global climate change.

Because of the importance of this ice sheet to Earth, NASA has been conducting aerial surveys of the island since 1992 using an aircraft carrying lasers and radars. Wallops personnel have returned once again to Greenland to take a "snapshot" of large areas of the glaciers, which have shown some dramatic changes in recent years.



Artist's Rendition of the P-3 Mapping

"The measurements obtained during the aircraft flights will help scientists better understand glacial changes caused by global climate change," said Bill Krabill, the lead NASA investigator for the mapping missions.

Some computer models show that increased global temperatures will partially melt polar ice sheets, such as those in Greenland, and raise sea level. Others show that rising temperatures will result in increased snowfall and expand the size of the ice sheets.

"Knowledge of any change in these glaciers may indicate trends in world climate and provide an indirect measure of sea-level changes," Krabill said.

Measurements by NASA and universities over the past 11 years have shown the glaciers shrinking along the southeast coast of Greenland. Scientists have surmised that melting ice flows down to the rock below the glaciers and acts like a lubricant between the ice and rock. Thus, it becomes easier for the glacial ice to flow into the ocean. However, at the same time there has been an increase in the size of the ice sheet in the central portion of the island.

Krabill said, "We have to remember that these measurements only cover an 11-year life span of an island and ice cover that is many thousands of years old. We really don't know if this is a normal cycle of events for these ice sheets or if this is a true sign of permanent change for the island, and thus sea-levels."

It has been estimated that a 10-inch decrease in the average height of the central Greenland ice sheet would result in a 0.04-inch increase in the sea level of the world's oceans.

Wallops personnel departed May 8 for Greenland on the NASA P-3B. During the next four weeks, through early June, scientists will survey the ice sheet in the southern and northern parts of the island.

"You can take ice measurements from the ground, however**,** because the area you sample is small**,** you don't get an accurate look at the big picture of what's happening with the ice sheets," Krabill said. "The aircraft allows us to cover much larger areas, and obtain a more accurate picture of the ice sheets."

Advances in technology are what make it possible to develop maps of the ice sheets with very high accuracy, Krabill said. Using Global Positioning System (GPS) receivers, the aircraft is able to fly flight lines year after year and keep within feet of the original flight line, which allows mapping instruments to take measurements over the same area each year.

Using three different instruments this year, the scientists will be able to get a clear picture of the thickness of the ice sheet and information on depths of snowfall within recent years.

NASA will fly two laser systems on the aircraft that provide the height or elevation of the ice. The instrument sends a laser pulse to the surface of the ice, scanning an

(Greenland mapping continued on the back)

Wallops Shorts…….

In the News

Eastern Shore News

"Chairman of the Board – Details are important to Robert Nock, a longtime NASA staffer and Accomack zoning leader"

Linda Layton Receives Blood Bank Award

The Blood Bank of Delaware/ Eastern Shore has selected Linda Layton as a recipient of the organization's 2003 Community Service Award. The presentation will be made at the Salisbury area Chamber of Commerce luncheon on May 15.

Randal C. Bendler, Chairman of the Blood Bank, said that Layton's tireless support for their efforts and her enthusiasm in promoting blood donation have helped make the difference for thousands of patients on Delmarva.

Advanced Aircraft Systems Class Visits Wallops

"I would like to take this opportunity to thank you (Rich Rogers and George Postell) for inviting the students from my Advanced Aircraft Systems class and myself to NASA Wallops. We appreciated the visit to your facility as well as the classroom and hands-on training on the P-3 and King Air. This kind of experience is invaluable for these students. I have received many positive comments from the students who participated.

The time you spent with the students individually allowing them to operate the EFIS, flight director and FMS gave them hands-on training. This is undoubtedly the best way to learn this kind of advanced avionic equipment. It has been difficult in the past to teach such a course without access to large aircraft such as the P-3. The fact that the P-3 is so well equipped made a tremendous impression on the students. Given the flight schedule for the P-3 and how busy your schedule is, I am thankful for the time you spent with our students.

I look forward to working with you in the future. Thank you again for your time and help....."

Bob Conry
Department of Engineering and Aviation Science
University of Maryland, Eastern Shore

(Greenland mapping continued from the front.)

Knowing the speed of the laser light and the position and altitude of the aircraft, scientists can then develop a map of the ice sheet elevations. The laser system can help researchers develop maps of the ice sheet surface to an accuracy within 4 inches.

Researchers from the University of Kansas, Lawrence, will fly two radars. One is an ice penetrating radar that will give scientists a map of the bedrock below or the location of the bottom of the ice sheet. Combining the radar information with the laser data, researchers can then determine the thickness of the ice sheet.

The second Kansas radar is a newly developed snow accumulation radar. This radar will measure the top 60 feet of the snow pack. This will help researchers in trying to measure the annual snowfall.

The data from this year's flights will be added to the information gathered from previous missions, providing researchers valuable information in further understanding the effects of global climate change on the world's ice systems.

Centennial of Flight Milestone

73 years ago on May 15, Ellen Church became the first airline stewardess on a Boeing Air Transport Model 80 airliner and the world of flight is never the same again.

Do you have all the tools you need for a successful career?

Here's your chance to talk with a career coach about where your career is headed. Career Counselor, Cheryl Palmer, will be at Wallops to talk about any area regarding your career that is of concern to you on May 20 from 3 to 4 p.m. and May 21 from 9 to 11 a.m.

Whether you are contemplating a career change, in need of assistance with resume writing or interviewing techniques, or trying to develop an IDP, a career coach can help. Palmer also will be available at the NASA STARS Resume Building Class, May 20 from 12:30 to 2 p.m. in Building E-104, Room 310, to give pointers and explain how a career counselor can help you develop your best resume.

To schedule a private session with Palmer call her on x66-5794 or Tracey White on x66-7823.

The Earth Day Backyard Carnival

Fredia Johnson, NASA Facilities Management Branch, watches as Eastern Shore Action staff "fish for trash" using a fishing pole and a magnet as bait.

Other activities included "toss the toilet seat football, revel in the recycleable ring toss and slap leather in the energy shootout. Lunch was provided by the Wallops Exchange and Morale Association.

Photos by Keith Koehler.

Mike Hooks, EG&G, (left) watches as Donnie Shumaker, Cube Corporation tries to clean up recyclable plastic bottles from the "Swamp of Death". The swamp was created using water colored with green and blue food dyes. Dry ice pellets were used to create the eerie swamp mist.

May is Asian Pacific American Heritage Month

Brown Bag Luncheon

"Good Nutrition Habits to Help Manage Stress"

Speaker:
Pauline Milbourne, Virginia Cooperative Extension Service

May 14
11:30 a.m. to 12:30 p.m.
Williamsburg Room

American Red Cross Blood Drive

Tuesday, May 13
Building F-3
9:30 a.m. to 1:30 p.m.

To schedule an appointment, call the Health Unit on x1766.

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